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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/591,897

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Tobias Lang

3804

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278 7590 06/25/2007  
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EXAMINER

WEST, JEFFREY R

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/591,897	Applicant(s) LANG, TOBIAS	
	Examiner Jeffrey R. West	Art Unit 2857	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 May 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 September 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>09/07/06</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Drawings*

1. Figures 1 and 5 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).
2. The drawings in Figures 2, 3, 4, 6, and 7 are objected to because they do not have sufficiently descriptive labels. The graphs in Figures 3, 4, 6, and 7 should contain descriptive titles to indicate to one having ordinary skill in the art what is being displayed. Further, blank boxes in drawings should be labeled descriptively unless it is a well-known component, specifically, blank boxes "A", "B", and "4" in Figure 2 should be labeled descriptively.
3. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet

submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

4. Claims 1, 3, 7, and 9 are objected to because of the following informalities:

In claim 1, lines 5-6, to avoid problems of antecedent basis, "the reception" should be ---a reception---.

In claim 1, lines 7-8, to avoid problems of antecedent basis, "the time" should be ---a time---.

In claim 1, line 9, to avoid problems of antecedent basis, "the time" should be ---a time---.

In claim 3, line 2, to avoid problems of antecedent basis, "the chronological" should be ---a chronological---.

In claim 3, lines 2-3, to avoid problems of antecedent basis, "the focal" should be ---a focal---.

In claim 7, line 4, to avoid problems of antecedent basis, "the time" should be ---a time---.

In claim 7, line 5, to avoid problems of antecedent basis, "the time" should be ---a time---.

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In claim 9, line 2, to avoid problems of antecedent basis, "the chronological" should be ---a chronological---.

In claim 9, lines 2-3, to avoid problems of antecedent basis, "the focal" should be ---a focal---.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is considered to be vague and indefinite because it includes a plurality of variables enclosed in parenthesis as appearing to define a particular term. For example, in lines 5 and 8, "the ultrasonic signal" is presented with "(A0, B0)". However, it is unclear to one having ordinary skill in the art whether the limitations in parenthesis are part of the claimed invention (See MPEP § 2173.05(d)) as it is unclear which signal "A0" or "B0" is considered to be "the ultrasonic signal". Similarly, line 4, refers to "the ultrasonic transducer (A, B)" and line 8 describes "a value ( $Amp_{max}$ ,  $T_S$ )". Again, it is unclear as to one having ordinary skill in the art as to which of "A" or "B" is defining the "transducer" and which of " $Amp_{max}$ " or " $T_S$ " is defining the "value".

Claims 3, 4, 5, and 7-9 are similarly rejected for their recitations of "the ultrasonic signal (A0, B0)", "the characteristic value ( $Amp_{max}$ ,  $T_s$ )", "an ultrasonic signal (A0, B0)", "an ultrasonic transducer (A, B)", and "a value ( $Amp_{max}$ ,  $T_s$ )".

Claim 4 and 5 are also rejected under 35 U.S.C. 112, second paragraph, because they refer to "the output signal of the comparator" while claim 4 provides "a comparator (10) whose input is supplied with a transducer output signal". Therefore, it is unclear to one having ordinary skill in the art whether "the output signal of the comparator" refers to a comparator output or the previously presented transducer output signal supplied to the comparator.

Claims 2 and 6 are rejected under 35 U.S.C. 112, second paragraph, because they incorporate the lack of clarity present in parent claim 1.

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 2 and 4-8, as may best be understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art in view of JP Patent Application Publication No. 2003-050145 to Eshita et al.

With respect to claim 1, Applicant admits as prior art an ultrasonic flow sensor (page 1, line 22 and Figure 1 – page 5, line 17), including at least one ultrasonic

transducer for transmitting and receiving ultrasonic signals (page 1, lines 22-24 and 26-28 and Figure 1 – page 5, line 17) and a receiver unit that is connected to the ultrasonic transducer (page 6, line 30 to page 7, line 2) and detects a predetermined event of the ultrasonic signal as the reception time (page 6, lines 29-30), wherein the receiver unit is embodied in such a way that it determines the time of a value characteristic of the ultrasonic signal (page 7, lines 4-6).

With respect to claim 2, Applicant admits as prior art that the receiver unit determines a maximum amplitude of the ultrasonic signal as a characteristic value (page 7, lines 4-6).

With respect to claim 4, Applicant admits as prior art that the receiver unit includes a comparator whose input is supplied with a transducer output signal and a reference signal (page 6, line 30 to page 7, line 2 and Figure 5 – page 5, line 29), and the receiver unit determines a piece of information about the time of the characteristic value from the output signal of the comparator (page 7, lines 2-6).

With respect to claim 5, Applicant admits as prior art that the reference signal supplied to the comparator is a threshold not equal to zero (page 6, line 30 to page 7, line 4 and page 7, lines 14-15) and the output signal of the comparator is a pulse width modulated signal from which the time of the characteristic value is determined (page 7, lines 4-6 and 14-15).

With respect to claim 7, Applicant admits as prior art a method for detection of an ultrasonic signal in an ultrasonic transducer (page 1, lines 22-24 and 26-28 and Figure 1 – page 5, line 17) by means of a receiver unit (page 6, line 30 to page 7,

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line 2), which detects a predetermined event of the ultrasonic signal as a reception time (page 6, lines 29-30), wherein the receiver unit determines the time of a value characteristic of the ultrasonic signal (page 7, lines 4-6).

With respect to claim 8, Applicant admits as prior art that the receiver unit determines a maximum amplitude of the ultrasonic signal as a characteristic value (page 7, lines 4-6).

As noted above, the invention of AAPA teaches many of the features of the claimed invention and while Applicant does admit as Prior Art determining a reception time as well as a time value of a characteristic value of the ultrasonic signal, Applicant does not explicitly admit as prior art correcting the reception time based on a time shift between the reception and time of the characteristic value.

Eshita teaches a method and apparatus for ultrasonic flow-velocity measurement comprising an ultrasonic transducer (0014, lines 1-8), first and second comparison circuits for detecting a reception time and a time of a characteristic value of the ultrasonic signal (0015, line 1 to 0016, line 17), and a gate circuit for receiving waveforms resulting from the first and second comparisons (0018, lines 1-5), determining a time shift between the reception time and time of the characteristic value (0027, line 1 to 0028, line 10), and correcting the reception time as a function of the time shift (0032, lines 1-8).

It would have been obvious to one having ordinary skill in the art to modify the invention of AAPA to explicitly include correcting the reception time based on a time shift between the reception and time of the characteristic value, as taught by Eshita,



because, as suggested by Eshita, the combination would have improved the system of AAPA by providing means for accounting for time drifting caused by ambient noise thereby increasing the resulting measurement accuracy (0007, lines 1-10).

9. Claims 3 and 9, as may best be understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art in view of Eshita et al. and further in view of U.S. Patent No. 4,933,915 to Bolstrom.

As noted above, the invention of AAPA and Eshita teaches many of the features of the claimed invention and while the invention of AAPA and Eshita does teach determining a maximum amplitude of the ultrasonic signal as a characteristic value, the combination does not specifically describe determining a chronological position of a focal point of an envelope curve as the characteristic value.

Bolstrom teaches a method of indicating the time of an acoustic pulse and a device for carrying out the method comprising a transducer with reception means (column 4, lines 12-18) for determining a reference time by detecting a chronological position of a focal point of an envelope curve as a characteristic value (column 3, lines 18-25 and column 4, line 61 to column 5, line 5).

It would have been obvious to one having ordinary skill in the art to modify the invention of AAPA and Eshita to specifically describe determining a chronological position of a focal point of an envelope curve as the characteristic value, as taught by Bolstrom, because the invention of AAPA and Eshita does teach determining a maximum amplitude of the ultrasonic signal and Bolstrom suggests a method for

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determining a characteristic value dependent on signal peaks (column 4, lines 27-37) that would have improved the system of AAPA and Eshita by detecting a characteristic value that is not skewed by attenuation thereby providing increased accuracy in time determination (column 2, line 65 to column 3, line 3 and column 3, lines 45-60)

### ***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

U.S. Patent No. 4,583,410 to O'Neil teaches a timing circuit for acoustic flow meters.

U.S. Patent No. 4,603,589 to Machida teaches an ultrasonic flowmeter.

U.S. Patent No. 4,922,750 to Magori teaches an ultrasound phase difference method for measuring high flow rates.

U.S. Patent No. 5,035,147 to Woodward teaches a method and system for digital measurement of acoustic burst travel time in a fluid medium.

U.S. Patent No. 6,634,240 to Wallen teaches a zero crossing detector and method for determining a zero crossing point.

U.S. Patent No. 5,421,212 to Mayranen et al. teaches a method and device in acoustic flow measurement for ensuring the operability of said measurement.

U.S. Patent No. 4,542,656 to Johnson teaches fluid flow monitoring.

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U.S. Patent No. 4,022,058 to Brown teaches an apparatus for determining the arrival time of alternating signals.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. West whose telephone number is (571)272-2226. The examiner can normally be reached on Monday through Friday, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eliseo Ramos-Feliciano can be reached on (571)272-7925. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Jeffrey R. West  
Primary Examiner  
Art Unit – 2857

June 20, 2007